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# COST *and* MANAGEMENT

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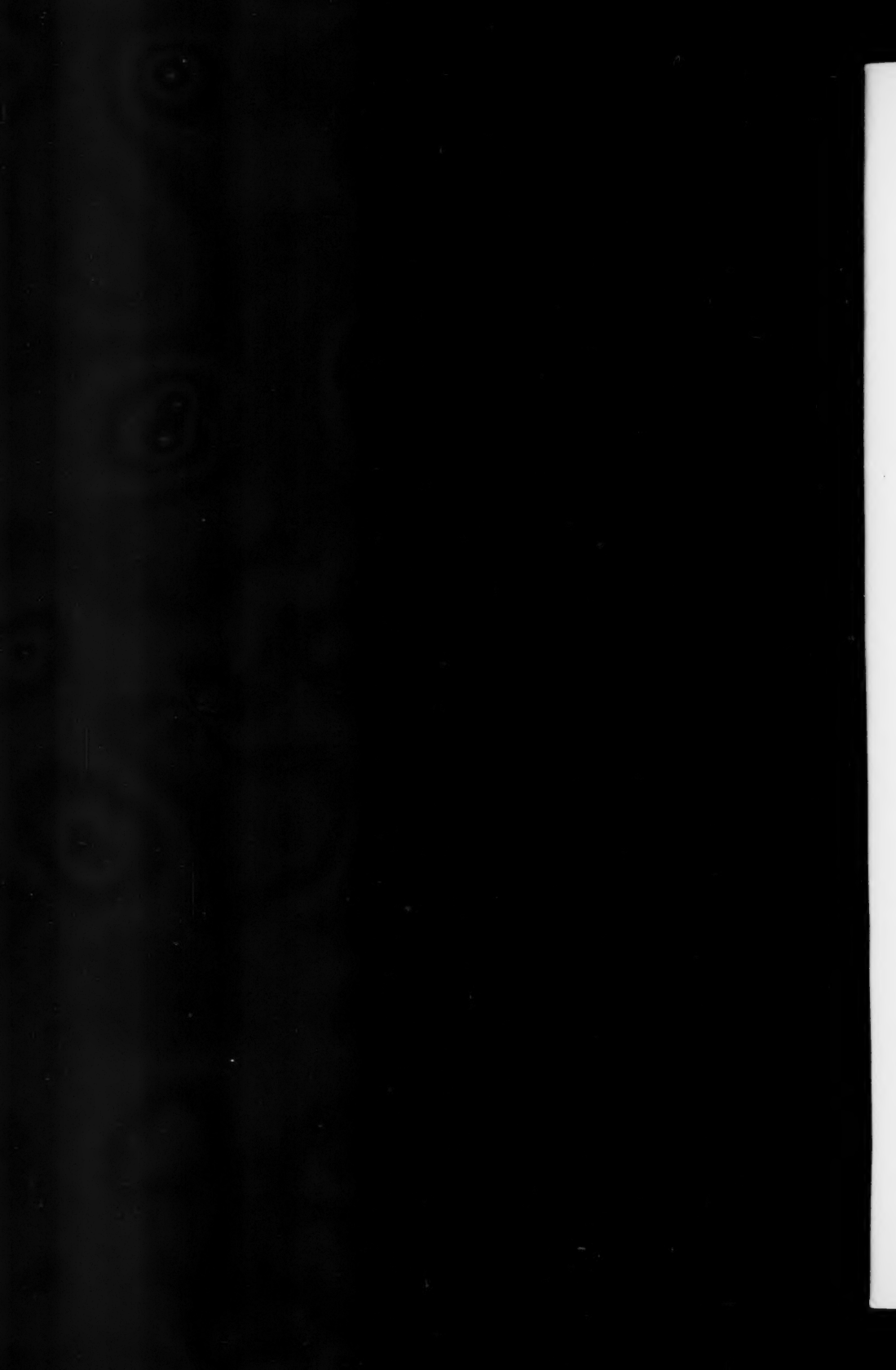
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J. N. Allan, R.I.A., Secretary-Manager and Editor

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## .. CONTENTS ..

|  |     |
|--|-----|
| EDITORIAL—SOME PRE-EXAMINATION SUGGESTIONS | 66  |
| ON-TO-BANFF .....                          | 67  |
| NEW MEMBERS .....                          | 69  |
| CONVENTION NOTES .....                     | 70  |
| CHAPTER NOTES .....                        | 71  |
| PERSONALS .....                            | 73  |
| CURRENT LITERATURE DIGEST .....            | 74  |
| COST ACCOUNTING IN A SMALL FACTORY .....   | 81  |
| STUDENT SECTION .....                      | 101 |

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# EDITORIAL

## Some Pre-Examination Suggestions

It has been said that more marks are lost on an examination through negligence than through ignorance, and while there may be some question as to the accuracy of such a statement, it is safe to state that in many cases, the knowledge of the candidate and his qualifications in a particular subject have been betrayed by the manner in which he has presented his answers. It is hoped that a few suggestions in preparing for and writing the examinations will enable candidates to reflect more accurately their knowledge of the subject on which they are being tested.

At least three or four weeks should be devoted to review and it is important that such review should be conducted in a systematic manner so that it will be thorough and effective. It is well to lay out a definite plan and make the most effective use of the time available. Allot so much time to each subject, giving emphasis to those subjects which have presented the greatest difficulty and divide the time between a review of the course and a survey of previous examination questions.

In reviewing the course, attention should be concentrated upon the governing principles and not so much on the detail, and remember that it is not so important in knowing what and how it is done but why it is done. There have been complaints that questions on the examination were not covered in the syllabus, but the fact is, the candidate did not recognize the principles involved in the required solution or answer.

The portion of time given to the study of theory as against working out solutions depends upon the individual. While the candidate who has had considerable practical experience may have the advantage, yet there is a tendency to rely too much upon such experience in answering examination questions without sufficient technical knowledge. Such a candidate should spend more time reading and making notes, while the candidate who is short on experience needs to work out more problems. The attention of candidates in Accounting II and Advanced Cost Accounting is drawn to the fact that they are apt to forget some of the lessons taught when they were in the elementary stages, and these too should be reviewed.

The second part of the review should be devoted to previous examination papers which can be secured from the office of the Secretary-Manager. Reference should also be made to those questions which have been reviewed in the student section of "Cost and Management." Such a review should be made with a view to securing practice in writing examinations within the time allowed and to finding the weak spots. It is wise to take one of the old examination papers which has not been

## EDITORIAL

seen before, and without interruption, endeavour to answer it in the time allowed.

In regard to writing the examination itself, there are a number of important points to bear in mind which, if carefully observed will give the candidate a feeling of confidence and will enable him to utilize the time available to the best advantage.

Be on hand for the writing of the examination at least five or ten minutes ahead of time and be sure to have a suitable pen, pencil, ruler and a watch. Allow plenty of time to be at the desk and become fully relaxed by the time the question paper and examination books are handed out.

On receipt of the examination paper look it over quickly and budget the time according to the marks given to each question. If it is desired to have ten minutes for review there will be a total of 230 minutes for a four hour paper which is equivalent to 2.3 minutes per mark which can form the basis for allotting the right amount of time to each question. It is wise to leave to the last those questions which require an essay type of answer since the time given to such a question can be adjusted to the time available more readily than the solution type of problem. If the candidate finds himself under a nervous strain it is advisable to attempt the easiest question first to give him confidence.

Before attempting to answer any question read it through carefully to ascertain what the examiner wants. Read it through again but this time endeavour to establish the principles which will be involved in answering the question. Read it through a third time marking with a red pencil the outstanding features or points to be brought out in the answer. Too much emphasis cannot be placed upon the care with which the questions are read, for all too often information is overlooked and left out of the answer or something is read into the question which is not there.

It should be remembered that every effort is made to word each question as clearly as possible to avoid ambiguity and no question is intended as a trap. If it is considered that the question is ambiguous, add a note to the examiner outlining the method followed and the reason. When setting down the wording to a question present it in neat and legible writing and in logical sequence. It is not necessary to write like a copper plate engraver but illegible handwriting is evidence of carelessness or lack of consideration for those who have to read it. It stirs resentment, not sympathy. Do not waste time writing onto the working paper figures which may be used in their printed form to obtain the results desired.

Mathematical accuracy is important although it is surprising the number of errors that are made in simple arithmetic. While it is realized that the majority of such errors are made under the strain of meeting the time limit, nevertheless they do represent some loss of marks. Of much greater importance to the examiner is an error in principle and unless the solution to a problem is set out in proper form to indicate the reasoning followed, it is sometimes impossible to tell

## COST AND MANAGEMENT

whether the error is one of principle or of arithmetic. The examiner wants to be absolutely fair in grading a paper but the student must help him by presenting a neat and legible answer in such a way that the examiner can readily follow the line of reasoning. It also follows that too much time should not be lost in looking for errors in arithmetic. Save this until the end.

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## On To Banff

At their meeting in Toronto on February the 12th, the Directors approved the request of the Council of the Alberta Society to hold the Annual Meeting in Banff on July 8 and 9 instead of in Jasper on July 4 and 5 as was previously announced. Delegates travelling by train will arrive in Banff on the evening of July 7 and will spend the following three days in this vacation wonderland. From Banff the party will move into Calgary for two days where they will witness the opening of the world famous Calgary Stampede, which has been made possible by the change in plans. The Convention Committee with R. R. Gibb of the Calgary Chapter as Chairman is adding the finishing touches to a programme that will long be remembered by those who have the good fortune to attend.

In this issue we begin a series entitled "Convention Notes" prepared by the Chairman of the Publicity Committee, Harvey S. Greenway of the Lethbridge Chapter. In this series Mr. Greenway will paint a verbal picture in his own colourful style depicting something of what may be expected by those attending the Annual Meeting.

Our President, Mr. D. R. Harrison, has just completed a tour of most of the Ontario and Quebec Chapters and has asked each Chapter to appoint an On-to-Banff Committee, to promote interest among the members in this trip. It is his earnest hope that each Chapter will be well represented.

Complete details in regard to the itinerary, accommodation and transportation are being sent to all members and they are requested to make their reservations promptly.

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### New Members

#### **Bay of Quinte Chapter**

Bruce A. MacRae, Belleville-Sargent.

#### **Calgary Chapter**

Austin L. Lee, 1722 12th Avenue W.

#### **Fort William-Port Arthur Chapter**

A. H. Nelson, North Star Oil Co.

#### **Hamilton Chapter**

J. M. Lapp, Robertson-Irwin Co., Ltd.

#### **Kitchener Chapter**

G. J. Bryant, Robert Day, Grocer

R. Huggan, Savage Shoe Co. Ltd.

W. J. C. Laing, National Cash Register Co.

W. G. Tiegs, Chas. A. Ahren Ltd.

#### **Montreal Chapter**

N. Robert Brown, 3436 Rosemount Blvd.

J. K. Ebbitt, 5170 Cartier St.

Robert J. F. Dunlop, Belding Corticelli Ltd.

Marion E. Halfhide, 1385 Bernard Ave. W.

Dean H. Ladd, Dominion Burlington Mills Ltd.

Leo Limoges, Beaulieu, Gouin, Bourdon, Beaulieu & Casgrain.

Sydney Morris, Portner Rafman & Co.

Elsbeth Smart, C.A., 2447 Maplewood Ave.

G. W. Trainor, 2155 Lincoln Ave.

William Willisroft, R.C.A. Victor Co. Ltd.

A. W. McKenzie, 7400 Dieppe Ave.

Claude Mineau, 6340 St. Vallier St.

Rene A. Brosseau, 10409 de Laroche St.

#### **Ottawa Chapter**

Harry G. Fuller, Alexander Fleck Co.

H. A. Walker, Department of Veterans Affairs

#### **St. Maurice Valley Chapter**

C. P. Hackey, The Shawinigan Eng. Co. Ltd.

Sol Rennert, Rennert Freres, 18 5th St., Shawinigan Falls

Jules O. Trudel, Shawinigan Dairy Ltd.

#### **Toronto Chapter**

Arthur F. Adams, Gunn, Roberts & Co.

O. Frank Forward, Standard Chemical Co.

Thomas J. Hannan, Brunswick Balke Collendar Co. of Can.

R. F. Martin, Minneapolis Honeywell Reg. Co. Ltd.

N. D. Mathewson, Price, Waterhouse & Co.

L. F. Patterson, Don Valley Paper Co.

R. K. Todd, Monarch Knitting Co.

E. H. Walden, Imperial Varnish & Color Co. Ltd.

## COST AND MANAGEMENT

### Vancouver Chapter

Donald Y. Fyfe, 5530 Kings Rd. University Ave.

N. G. Florence, 3719 West 7th Ave.

George Edward Johns, 2719 East 54th St.

James H. Purdon, 2534 Nelson Ave., New Westminster

### Victoria Chapter

R. D. McColl, 305 Elizabeth St., Nanaimo

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## Convention Notes

### PROVINCE OF ALBERTA OFFERS A GALAXY OF SPECIAL ATTRACTIONS TO THE VISITOR

Almost any industrial expert or statistician will tell you, without exaggeration, that the foothills Province of Alberta is achieving a splendid record in the development of its natural resources. Production figures for its great industries of coal, agriculture and oil are steadily climbing; the future outlook is even more promising and the people themselves are determined to insure this future by diligence and vigor.

But the Alberta philosophy is a healthy compromise between work and play. Citizens apply themselves with a gratifying degree of enthusiasm where their daily tasks are concerned—and they're just as enthusiastic when playtime comes around. It's no wonder, just glance at the playtime facilities they have, right on their doorstep.

Albertans, naturally, make the most of their nearness to the world-famous national parks, Banff, Jasper and Waterton. But if the citizens of the province could choose only from these, parkland vacations would be rare and remote. Here's the solution—no spot in Alberta is more than an hour's drive from some popular vacation resort, some natural wonderland just as like to appeal to the tourist from across the boundaries as to the local enthusiast. To list everyone's favorite holiday spot would be an impossible task, for they are many and varied. However, some of these include Sylvan Lake, west of Red Deer; Gull Lake, west of Lacombe; we must mention the intriguing formations of the Bad Lands Reserve, north of Drumheller and of course the Alaska Highway.

From the foregoing there isn't much doubt as to the facilities available to Albertans, their friends and their guests. When holiday time comes along, they take their choice from the many favored locations, where recreation and relaxation are complete.

To all those planning on motoring to Banff to attend the Dominion Annual Meeting of July 8th-10th, we would suggest they consider spending the balance of the holidays and visit some of the other Alberta playgrounds.

## Chapter Notes

### FORT WILLIAM-PORT ARTHUR

Mr. H. N. Jordan, C.A., of Gunn Roberts and Co., Chartered Accountants, Toronto, was the speaker at the February 25th meeting and he had chosen as his subject "The current criticisms and comments with respect to the presentation of Financial Statements".

With the growth in number of shareholders and the use by unions of financial statements in their wage negotiations, Mr. Jordan stated, the method of presenting financial statements was being subjected to much criticism. Many people felt that the statements were too technical and could not be easily understood by the general public.

In their efforts to make their statements more readily understood, accountants are faced with many problems. For example, the scope of the balance sheet may cause much trouble. It is difficult to present in a brief statement the financial position of a large corporation which includes a number of companies engaged in different lines of endeavour. Secondly, the accountant cannot present in his statement those details which might be used by its competitors to the disadvantage of the company.

Following his talk Mr. Jordan replied to a number of questions raised by the members with regard to balance sheets and accounting problems.

Another feature of the meeting was a fine coloured film called "Steel" shown by R. H. Piper. This gave a vivid description of the various methods of manufacturing steel in Great Britain.

### OTTAWA

The February meeting of the Society of Industrial and Cost Accountants of Ontario, Ottawa Chapter, was held at R. L. Crain, Limited, on Thursday evening, February 17, 1949. This meeting took the form of a plant tour. Groups of seven were escorted through the plant to watch the machines in operation. Each group was accompanied by a Crain employee, who explained processes and answered all questions.

The tables in the large, airy cafeteria were decorated with pretty, spring flowers. After an excellent dinner, discussion was invited on plant operation and accounting methods with a panel of plant officers, Mr. H. N. Nurrish, Secretary-Treasurer and Comptroller, Mr. C. H. Everett, General Superintendent, and Mr. A. R. Jacques, Chief Accountant. Sound slides were shown on Work Simplification.

Among the forty members and guests present, was Mr. A. G. Bucknell, Assistant Secretary-Treasurer of the Society of Industrial and Cost Accountants of Ontario.

A vote of thanks to R. L. Crain, Limited, for one of the most enjoyable meetings of the season, was moved by Norman Wrigglesworth, and seconded by all those present.

## COST AND MANAGEMENT

### QUEBEC

The annual visit of the Dominion President is always greatly appreciated by the members of the Quebec Chapter. Each year, on this occasion, a meeting is held which we call "The President's Night", because the President of our Provincial Society makes it a point to accompany the Dominion President on his visit to the Chapters in the Province of Quebec.

This year, the President's Night was held on February 21st, at Le Cercle Universitaire and was very well attended by the members and some of their friends. Mr. Harrison gave us many suggestions on how to manage our attendance committee; he also raised our enthusiasm for the "On to Banff" committee and we are now sure there will be a good representation from Quebec City at the Convention.

Mr. Harrison was presented by Mr. A. J. Dolbec, a past-president of the Quebec Chapter, and our vice-president, Mr. R. S. Langlois, expressed the thanks of members. Mr. Harrison gave us a very enlightening talk on "What Is Cost Accounting and Its Value to Business". This speech was delivered the next morning before the students of L'Ecole de Commerce de Laval, where he received an overwhelming reception.

### TORONTO

On January 19th the student section held a well attended dinner meeting. Mr. J. Logan gave a talk on "Preparation of Standards" and Mr. W. Irwin gave a talk on "Wage Incentives". Both these gentlemen are members of the student group and the preparation and presentation of these papers showed a very thorough grasp of their subjects.

On February 10th the senior members held their regular meeting. The guest speaker was Mr. R. A. Read, of the J. D. Woods and Gordon Limited, who gave a very informative talk on "Work Simplification in the Office" and demonstrated his points with moving pictures. That there is a keen interest in this subject was evidenced by the many questions which the speaker was asked at the close of his address.

Mr. D. R. Harrison, of Port Arthur, president of the Dominion body, was present at this meeting and gave a short report on the growth of the society in the past year and the plans for the convention at Banff in July.

### VANCOUVER

The regular monthly Vancouver Chapter meeting was held in the York Room of the Hotel Georgia on February 10th. After a very enjoyable dinner, at which a record attendance was noted, the Chairman, Mr. Clifton H. Davis, opened the meeting by introducing those at the head table. Other visitors were then introduced from the floor, as well as all members, who stated their names and companies represented. New members, Mr. G. E. Johns and Mr. J. H. Purdon, were welcomed and presented with their membership cards. The chairman carried a message to all from Fred G. Coburn, who is now well on the road to recovery, regretting his inability to be present, but hoped to attend the next meeting. A vote of thanks was voiced to those attending the

## CHAPTER NOTES

meeting who are busy studying through the University Lecture Courses.

Mr. Harry V. Cox then introduced the speaker of the evening, Mr. Charles G. Chambers, C.A., Head Accountant for the MacMillan Export Ltd., who chose as his subject "Observations in the Lumber Industry". He covered his subject very thoroughly from the commencement of the logging operation, scaling, towing, etc., through to the sawmill and stacking. He outlined the various difficulties encountered, and the advantages of the B.C. Log Scale and how it was born. He stressed the importance of accountants preparing statements required by management, and in the form desired by management. The usual question period followed, and many more controversial points were discussed. Mr. Nick Abramsen, on behalf of the Vancouver Chapter, expressed and moved a vote of thanks to Mr. Chambers. It is hoped to have this talk prepared for publication in *Cost and Management* shortly. Those present stated this was one of the best meetings they had attended. There were fifty-six present, the Student Members have been given more encouragement to turn out to these meetings, and nineteen were there.

## VICTORIA

"Mechanical Accounting" was the title of an address given by Mr. N. Abramsen, R.I.A., guest speaker, at a Dinner Meeting held at the "Sirocco" on 21st February last. The Chairman, Mr. Norm. Smyth, welcomed the visitors and introductions were made. Mr. George Marshall introduced the speaker. Mr. Abramsen brought greetings from the Vancouver Chapter, and for the benefit of the visitors gave an outline of the aims and objects of the Society. The topic was of great interest to all accountants and business men, with his main theme that the production of accounting reports should be scheduled to parallel the industry production processes. Mr. Ken Gunn voiced the hearty appreciation of the Victoria Chapter.

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## Personals

Mr. William A. Plowman, R.I.A., of the Edmonton Chapter, has received promotion to the post of Acting City Treasurer for the City of Edmonton. The promotion is effective from January 24th, 1949. Until the time of the new appointment, Mr. Plowman was employed in the Comptroller's Department of the City of Edmonton as an accountant, starting in the City Treasurer's Department 22 years ago then transferring to the City Comptroller's office nine years ago. A member of the Edmonton Chapter for some years, Mr. Plowman is at present Chairman of the Membership Committee.

Mr. Romeo Query, C.A., R.I.A., formerly Controller of LaSoliel Limited, Quebec City, has been appointed Director of Services, Department of Printing and Stationery, Ottawa.

Mr. Query is a charter member and a past chairman of the Quebec City Chapter and is first vice-president of the Quebec Society.

## Current Literature Digest

By HAROLD BRICKER, C.G.A., R.I.A.

**COMPLACENCY?** Is this a word for war-time use only? While times are good, we may neglect to observe the forest because of all the trees. We might assume, too easily, that we are on the top of the world. How many of us feel, for example, that Britain is in the throes of a Socialization experiment which is apt to be more unfavourable industrially and economically than FORTUNATE. If that is our attitude, we had better take another LOOK, quickly and most thoroughly. Can you visualize the implications in the comment published in *Business Management*, February 1949?

"Great Britain Business Machine Output, Up 6 Times Since 1938."

The manufacture of business machines and equipment in Great Britain, has shown a heavy increase since 1945. In fact, the total production value last year is almost six times greater than in 1938. The value of such machines for EXPORT is also about six times greater than in 1938.

### MARKET RESEARCH AND THE COST ACCOUNTANT

The *Cost Accountant*, Vol. 27—No. 5, February 1949, has published a very interesting article under this heading, by D. F. Evans Hemming, F.C.W.A. in which the scientific British approach to this subject is reflected. Some of the points noted include the following:

What is understood by this title of "Market Research",—in this country (Great Britain), a comparatively new science? What are its techniques? The science is concerned with the exploration of the markets to determine the potentiality of "profitable" sales and the volume of those sales. Notice a distinction between SALES and PROFITABLE SALES. Economically, the perfect market is one in which three conditions exist; (1) a large number of independent sellers, (2) a large number of independent buyers; and (3) every buyer must buy from the lowest price seller, and the seller sell to the buyer who will pay the highest price. The market is with the people with money who have a desire to spend a portion of that money on a product in the satisfaction of their wants.

Each product and class of product has its own market which is invariably established by three things: (a) Utility, (b) Price, (c) Quality.

The market population falls into three broad groups:—(1) The premium price stratum, (2) the medium price stratum, and (3) the low price stratum.

There are four commonly accepted techniques in the practice of market research. The facts relative to the market and the product must be gathered. Fundamental questions, which must be answered, might include:—

## LITERATURE DIGEST

(a) Why do we make this product? What purpose does it serve? What are its merits?

(b) Is it a product of high utility value, a product of fashion, or a filler product of no permanent value?

(c) Why should the consumer buy this particular product?

The essential factor to be discovered is the number and nature of the consumers and the demand at the price levels. The company policy must then be formulated and checked against the net results in terms of price and profit structure index figures.

The object is to discover how the volume would fluctuate if effect were given to a price change. By the application of "volume compensation" formula the effect on the earning capacity of the company can be assessed. The promise of greater volume does not as a matter of course imply a price reduction. That is a matter of policy formulated after consideration of all relative data regarding plant potential—expense—capital and the profit to net worth result (P/W). Whatever course is followed the effect must be constantly measured. The most effective measurement is by the construction of the "profit structure" index figures, i.e.:—

$$\begin{array}{ccccccc} P/V + M/S = P/S; & P/S + S/F + F/W = P/W & \text{and} & B/E \\ 1 & 2 & 3 & 4 & 5 & 6 & 7 \end{array}$$

1—Profit volume ratio.

2—Margin of safety ratio.

3—Profit to sales ratio.

4—Sales to fixed assets ratio.

5—Fixed assets to net worth ratio.

6—Profit to net worth ratio.

7—Break even point.

The important fact is that, while cost price does not fix selling price it is essential that results of an applied price policy should be checked against cost trend.

In this manner market research activities, a vital function, take their place in the structure of management control, and the controller (cost accountant) plays an important role in providing essential and authentic data which is in fact part of the final profit statement.

### ECONOMIC RESTRICTIONS ON EARNINGS

In the Journal of Accountancy, January 1949, George D. Bailey, CPA, has written an article which is of general interest in that he says that earnings as determined by today's generally accepted accounting principles must be regarded as restricted by economic forces, to provide the effect of inflation on inventory and depreciable assets.

This subject has Canadian interest as well. The Hamilton Chapter recently held a discussion group meeting of about fifty members with invited personnel of their staffs and discussed this subject in various forms. It was a new venture and no conclusions were reached although the discussion was very lively and interesting and ended only by placing a time limit on the meeting.

Some of the viewpoints in this article should be of especial interest to our members who were present at the above noted meeting. He

## COST AND MANAGEMENT

mentioned the economic restrictions which are placed upon profits particularly in the two areas of inventories and plant replacements. With respect to inventories, and with the exception of a small percentage of business concerns, inventories are kept on a cost basis which assumes that the earliest or average cost is that to be considered in determining the profit on the sale. In a very large percentage of cases that is an exact reality because all business does not mark up its profits to recover what it will have to pay to replace its goods but acts, generally, to try to recover what it has paid for its goods.

If one business buys an article for \$1 and sells it for \$1.25 and can repurchase a similar article for \$1, it presumably has 25 cents profit. Where a business buys an article for \$1, sells it for \$1.25, and has to pay \$1.25 to buy a new article which it might sell for \$1.50, it may have received a profit of 25 cents but the economic restriction upon that profit is such that it can be used for nothing at all except the replacement of the article which was sold. Now this does not mean that business has made a fictitious profit, nor does it mean that it has made any kind of profit as a result of the increasing prices. It is fairer, perhaps, to say that business may have suffered a loss because of the increase in prices. In many cases profits do not include a specific attempt to recover the replacement cost. Some have adopted a convention well recognized and accepted in dealing with inventories, which, to a certain extent, considers that the last goods acquired are those that are sold first and thus more closely relates cost to current prices.

There is as yet no magic formula to convert monetary accounting profit to economic profit, but the economic demands and restrictions on profits are demands which cannot be escaped, and must be considered by each company in the determination of its various financial policies.

Nobody knows what replacement costs will be in the future. As soon as one abandons the strict rules of accounting, one lays oneself open to a charge of monkeying with the books—no matter how good one's intentions are—in producing fancy figures. That policy can do a lot more harm than may arise from presenting the figures just in the way they come out. Surveys have already shown a widespread suspicion of corporate reports. If that suspicion is reinforced by a rumor that accountants of companies are doctoring the company accounts, NO AMOUNT OF EXPLAINING WILL UNDO THAT DAMAGE.

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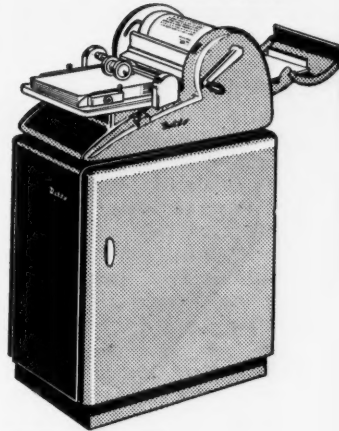
COST AND MANAGEMENT

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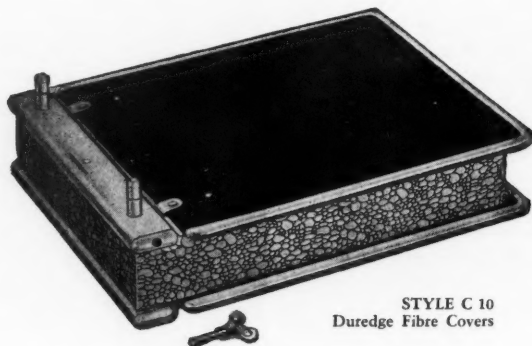
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## Cost Accounting in a Small Factory

A Thesis Submitted by R. G. NELLES, R.I.A.

### THE COMPANY AND ITS PRODUCTS

Before we can understand the problems, both of manufacture and accounting, confronting the management of this particular factory, it is necessary that we study the growth of the concern, and the development of those problems.

The factory was originally founded as a jobbing machine shop. Largely due to the efforts of its engineering staff, it has expanded to a small factory, manufacturing carburetor and manifold assemblies for tractors, grain loaders, bench vises, sugar beet loaders, and other related products. It continues to do considerable machine shop work, specializing in gears of cast iron, steel, or bronze.

In view of this development process, it has been found necessary to pay more and more attention to costs, and the installation of methods of accounting for those costs. The original cost system was based principally on the individual job method, costs being accumulated for each piece of work completed in the machine shop. However, with the addition of production departments and a foundry, it can readily be seen that the cost system has been in a state of constant revision and will continue to be revised as plans for expansion are put into effect.

### A TRIP THROUGH THE PLANT

The plant itself covers some 20,000 square feet of floor space, and employs seventy-five people, of which more than half are skilled craftsmen. Due to the wide variety of products, it has been found necessary to divide the plant into seven departments.

The largest department, in the matter of floor space, is the foundry. Here, facilities are provided for casting iron, brass, and aluminum. The blast furnace has a capacity of several hundred pounds of scrap iron or pig iron. A large reserve of coke is maintained for firing purposes. The principal castings produced are manifolds, both intake and exhaust, carburetor bodies, gear boxes for beet loaders and jaws for vises. Adjacent to the foundry is the core room, consisting of a large furnace, heated with gas, and air compressor, and three work benches. The foundry is equipped with an overhead crane which is used for moving heavy castings and also charging the blast furnace.

Next to the foundry is the pattern department, where all patterns used in the foundry are made. The equipment consists of a band saw, planer, drill press, wood lathe, sander and several woodworking benches, equipped with the necessary hand tools. A storage department is maintained for the preservation of patterns.

The castings pass from the foundry into the finishing department, where a gas-operated heat treat furnace prepares them for machining. The castings are then sand-blasted to remove shale and in the case of manifolds, all contacting surfaces are ground down and then finished on

## COST AND MANAGEMENT

a planer. The completed castings are painted and passed either into the final assembly and machine construction department or into the stock room for future use.

The next department to consider is the machine shop. The equipment consists of two heavy lathes, two medium lathes, a turret lathe, milling machine, two shapers, two drill presses, a power hack saw, an air compressor and a plating machine. Here the moving parts and gears for overhead shovels and sugar beet loaders are made. Vise screws and grain loader shafts are also machined. The machine shop still accepts job orders, both for outside customers and for factory maintenance.

The small parts department employs the largest number of men and turns out complete carburetor assemblies and other miscellaneous small parts. There are six small lathes, three drill presses, a turret lathe, a small milling machine, a bench grinder, a punch press and a power hack saw. A large steel bench is used for carburetor assembly work. A hardening room is provided for small parts and contains three electric crucibles. Completed parts are passed either to the final assembly or stock departments.

In the final assembly and machine construction department the construction work is done on frames for sugar beet loaders, grain loaders and overhead shovels. The blades for bull dozers and angle dozers are also fabricated here. Bench vises are assembled and passed to the warehouse for storage pending delivery. Equipment consists of two power hack saws, an electric welding machine, oxyacetylene welding tanks, two blacksmith forges and a drill press.

A welding and maintenance department is equipped to assist the machine construction department in addition to its regular maintenance work. Two portable electric welding machines and two work benches comprise the equipment.

The shipping and receiving department is centrally located at the rear of the plant, and is serviced by a railroad spur. An elevated loading dock facilitates incoming and outgoing shipments. At the front of the shipping and receiving department a stock room and warehouse opens both into the plant and the shipping and receiving department.

The general office occupies the front centre portion of the building. The engineering and drafting department, the cost accountant's office and a tool crib are located directly behind the office so that continuous contact may be maintained with all departments of the plant. Employees' wash rooms are placed between the general office and engineering department.

## THE ORGANIZATION CHART

The organization is divided into ten functional zones as follows:

### **Proprietorship**

The stockholders elect a board of directors, who in turn, appoint a president who also acts as general manager.

## COST ACCOUNTING IN A SMALL FACTORY

### **Mechanical Efficiency**

The factory manager is responsible to the president for the operation of the entire mechanical aspect of the factory.

### **Power**

The electrician is responsible to the factory manager for the operation and maintenance of purchased electrical facilities as well as electric lighting and motor performance.

### **Physical Plant**

The maintenance foreman has a staff of welders, a millwright, and general labour for the purpose of maintaining the plant and its equipment. He is responsible to the factory manager.

### **Planning, Dispatching and Transportation**

This work, with the exception of driving the truck, is performed by the factory manager, in addition to his other duties.

### **Stocks and Stores**

For economy of operation the purchasing agent is not only responsible for obtaining raw materials and supplies, but is also responsible for the supervision of the receiving and shipping departments and the tool crib. He is responsible both to the general manager and the factory manager.

### **Skill and Labour**

The administration of plant labour and the maintenance of satisfactory production is the responsibility of the production manager. He has seven department foremen directly responsible to him and in turn is responsible to the factory manager.

### **Commerce and Finance**

This phase is handled by the secretary-treasurer, who also acts as office and credit manager. A sales manager is directly responsible to the general manager.

### **Accounting and Auditing**

The chief accountant, aided by a cost accountant and a bookkeeper, comprise the accounting staff. Timekeeping is looked after by the cost accountant. The chief accountant presents his reports monthly to the general manager.

## **THE ACCOUNT CLASSIFICATION**

The fundamental structure of the account classification is based on numbers up to 1000 as follows:

Factory Ledger—1 to 400

General Ledger—401 to 1000

This is a straight numerical plan (with certain gaps left to take care of future requirements) but it is unusual in that it starts with factory ledger accounts first. There is a practical reason for giving the factory ledger accounts the smaller numbers. Much of the detail accounting work of the organization refers to the factory and the use of small account numbers results in considerable saving of time and error.

## **COST AND MANAGEMENT**

### **CLASSIFICATION OF FACTORY LEDGER ACCOUNTS**

#### **Stores Inventories**

##### **Supply Group**

- 1 Coke Account
- 5 Factory Supply Stores Account
- 9 Small Tool Stores Account

##### **Material Group**

- 21 Purchased Parts Stores Account
- 24 Raw Material Stores Account

#### **Unapportioned Expenses**

##### **Controllable**

##### **Non-Productive Labour Group**

- 51 Superintendence
- 52 Receiving and Shipping
- 53 Sundry Non-productive Labour

##### **Pre-requisite Productive Labour**

- 55 Drafting and Designing Labour
- 56 Pattern Labour
- 57 Tool, Die and Jig Labour
- 58 Welding and Maintenance Labour

##### **Pre-requisite Productive Material**

- 61 Drafting and Designing Material
- 62 Pattern Material
- 63 Welding and Maintenance Material

##### **Services and Supplies Purchased**

- 65 Purchased Water
- 66 Purchased Gas
- 67 Purchased Electricity
- 68 Supplies

##### **Other Controllable Items**

- 71 Spoiled Work
- 72 Unemployment Insurance
- 73 Unclassified

##### **Predetermined**

- 81 Depreciation
- 82 Insurance
- 83 Taxes
- 84 Workmen's Compensation Board Insurance

#### **Unapportioned Expenses**

##### **Apportioned**

- 91 Building Expense
- 92 Tool, Die and Jig Expense
- 93 Pattern Expense
- 94 Drafting and Designing Expense
- 95 Welding and Maintenance Expense
- 96 Shipping and Receiving Department Expense
- 97 Warehouse and Tool Crib Expense



## **COST ACCOUNTING IN A SMALL FACTORY**

- 98 Cost Accounting and Timekeeping Expense
- 99 General Factory Expense

### **Departmental Burden Accounts**

- 101 Small Parts Department
- 102 Machine Shop
- 103 Foundry Department
- 104 Finishing Department
- 105 Final Assembly and Machine Construction Dept.

### **Work in Progress Accounts**

- 201 Small Parts Work in Progress
  - 01 Direct Labour
  - 02 Direct Material
  - 03 Applied Burden
- 202 Machine Shop Work in Progress
  - 01 Direct Labour
  - 02 Direct Material
  - 03 Applied Burden
- 203 Foundry Department Work in Progress
  - 01 Direct Labour
  - 02 Direct Material
  - 03 Applied Burden
- 204 Finishing Department Work in Progress
  - 01 Direct Labour
  - 02 Direct Material
  - 03 Applied Burden
- 205 Final Assembly and Machine Construction Work in Progress
  - 01 Direct Labour
  - 02 Direct Material
  - 03 Applied Burden

### **Stock Inventories**

- 301 Component Stock Account
- 305 Product Stock Account

### **Balancing Account**

- 400 General Ledger Balancing Account

In discussing the cost accounting system and its operation we will endeavour to show the source of the various entries to each account and sub-account in the Classification of Factory Ledger Accounts, the forms used to compile the necessary information for such entries, and the ultimate disposition of the balances in these accounts.

## **THE ACCOUNT CLASSIFICATION**

In making a superficial examination of the Factory Ledger, you will note that it is divided into five zones:

## COST AND MANAGEMENT

### Stores

Unapportioned Expenses

Departmental Burden Accounts

Work in Progress Accounts

Stocks

**Stores**—The stores ledger is composed of two main divisions:

#### **Supply Group**

- 1 Coke Account
- 5 Factory Supply Stores Account
- 9 Small Tool Stores Account

#### **Material Group**

- 21 Purchased Parts Stores Account
- 24 Raw Material Stores Account

Purchase requests originate either with the factory manager or the chief storekeeper. When an order is received by the sales department, a copy is passed to the factory manager. He then checks with the storekeeper and ascertains whether or not sufficient material is on hand to complete the order. If not, he authorizes the chief storekeeper, who also acts as purchasing agent, to make the necessary purchases. However, for normal routine orders this procedure is seldom necessary as sufficient quantities are held in stock.

The stores ledger sheet shows in addition to the description and quantity on hand, the minimum and maximum quantities to be maintained. These amounts vary in accordance with distance from source of supply, and value of investment. The storekeeper prepares weekly a list of balances below the minimum figure for the factory manager, who, in turn, authorizes him to place the standard size order or orders, for the deficient materials.

The storekeeper then prepares a purchase order, in four copies. The original is mailed to the supplier as an order, the duplicate copy is retained as a file copy in the warehouse, the triplicate copy is held on file in the receiving and shipping department pending receipt of the material, and the fourth copy is passed to the general office to be filed pending receipt of the invoice. All purchase orders are serially numbered and the vendor is instructed to identify all packages and invoices with the purchase order number. Before filing the warehouse copy of the order, the storekeeper inserts the quantity ordered in the due to be received column of the ledger sheet together with the date ordered.

When the shipment is received in the receiving and shipping department, the receiving clerk inserts the quantities received on his copy of the purchase order and passes it to the warehouse with the packing note and bill of lading covering the shipment. The materials are then transferred to the warehouse and placed in bins and on racks, or in the case of bulk raw materials, such as coke and scrap metals, to the appropriate stock piles out of doors. The storekeeper enters in the ledger the quantities received and strikes off the amount shown in the due to be received column of the ledger.

## COST ACCOUNTING IN A SMALL FACTORY

When the invoice is received in the general office, it is stamped with a rubber stamp, showing Purchase Order No., Quantity O.K., Quality O.K., Price, Terms, and Discount O.K., Account to be Charged, Amount, Work in Progress Order No., and Approval for Payment.

The invoice is entered in a voucher register and allotted a number. It is then passed to the storekeeper, who checks it against the receiving clerk's copy of the purchase order, and the packing note. He inserts the cost of the materials in the stores ledger and approving the invoice for payment passes it back to the office. In the event that the shipment received does not complete the purchase order, a notation of the quantities received is made on the reverse side of the purchase order and it is again placed in the pending file awaiting further shipment. A similar notation is made in the office and on the stores ledger sheet. The receiving clerk's copy is returned to him with bills of lading and packing note to be filed.

When it is desired to withdraw materials or supplies from the warehouse or stockpile, a requisition is prepared in three copies. It shows a description of the material required, the job or order number for which it is to be used, the department requiring it and when and where it is to be delivered. It must be signed by one of the foremen or the factory manager. The original copy of the requisition is retained by the storekeeper, the duplicate is returned to the person requisitioning the material and the triplicate copy is passed to the cost accountant to be added to the cost sheet for the particular order involved.

All copies of the requisition are priced by the storekeeper using the oldest price first method, but only the original and triplicate are extended. This is done in order that the person requisitioning the material will not be unduly delayed. The storekeeper then extends and posts the requisition to the appropriate stores ledger sheet and places it on file. The cost accountant extends his copy of the requisition, posts it to the cost sheet for which the material was required, and places it on a pending file to be recapitulated at the end of the week by departments to provide the cost of direct materials. The duplicate copy which is returned to the department requisitioning the material is attached to the department's copy of the production order or in the case of the foundry to their daily casting report.

Due to the fact that a perpetual inventory is maintained, quantities on hand are verified twice a year and necessary adjustments made. Separate control accounts are maintained for each section of the stores inventory group and all receipts and issues of stores are recapitulated daily and posted to the control accounts before they are filed. The subsidiary ledgers are balanced against the control accounts monthly and a report of the inventory status prepared for the general office.

### **Unapportioned Expenses**

Unapportioned expenses are primarily divided into three groups:

1. Controllable Expenses
2. Predetermined Expenses
3. Unapportioned Expenses

## COST AND MANAGEMENT

These expenses are accumulated monthly and apportioned over the various direct production departments. At the end of each month an expense apportionment sheet is prepared showing this distribution. After all apportionments have been made the total of unapportioned expenses not already applied directly to a productive department is accumulated in General Factory Expense Account (Account No. 99) and then distributed to the various productive departments. An attempt is made to apportion expenses to all departments in direct proportion to the benefit received by that department.

Controllable Expenses are sub-divided into five sections:

1. Non-productive Labour
2. Pre-requisite Productive Labour
3. Pre-requisite Productive Material
4. Supplies and Services Purchased
5. Other Controllable Items

### 1. Non-Productive Labour

- 51 Superintendence
- 52 Receiving and Shipping
- 53 Sundry Non-productive Labour

The first expense to be considered under the non-productive labour group is that of superintendence. The foremen, although paid on an hourly basis are required to report daily the amount of time spent in supervision and job instruction. The cost of this time is charged daily to the department concerned while the balance of their time is considered productive labour. The salary of the factory manager is charged to General Factory Expense for later apportionment.

The salaries of shipping and receiving clerks, freight handlers, truck drivers are accumulated in Receiving and Shipping (Account No. 52) and are arbitrarily divided between the receiving and shipping department (two thirds) and the storeroom and tool crib (one third). This is necessary as these employees work in either department as required.

Sundry non-productive labour is charged directly to the department concerned, for example, a sweeper in the small parts department, or to general factory expense for later apportionment.

### 2. Pre-requisite Productive Labour

- 55 Drafting and Designing Labour
- 56 Pattern Labour
- 57 Tool, Die and Jig Labour
- 58 Welding and Maintenance Labour

Labour charges for each of these accounts are summarized each week from the regular time tickets and charged directly to the department concerned or if not applicable to any particular department they are included in General Factory Expense for later apportionment. As previously stated all of these charges are recapitulated on the expense apportionment sheet and posted as one amount.

### 3. Pre-requisite Productive Material

- 61 Drafting and Designing Material
- 62 Pattern Material

## COST ACCOUNTING IN A SMALL FACTORY

63 Tool, Die and Jig Material

64 Welding and Maintenance Material

This group is handled in much the same manner as the Pre-requisite Labour Group. All indirect requisitions for material are summarized and apportioned weekly.

### 4. Services and Supplies Purchased

65 Purchased Water

66 Purchased Gas

67 Purchased Electricity

68 Supplies

Purchased Water Expense is included in General Factory Expense as it is felt that the small consumption of water does not merit an elaborate distribution plan.

Purchased gas is received through two meters. One meter regulates gas used in the heat treat furnace in the finishing department and the core room furnace. The other meter regulates gas delivered to the overhead heating system. This charge is divided between the various departments according to the number of cubic feet of air space to be heated.

Purchased electricity is also received on two meters, one for power and one for electric lighting. This is necessary as different rates are applicable in each case. Electricity used for power is distributed on the basis of the horsepower of the various electric motors used in each department. Electricity used for lighting is distributed according to the number of light bulbs used in each department. As in previous apportionments, charges not directly applicable to any department are accumulated in General Factory Expense for later apportionment.

Supplies used such as lubricating oil, grease, wiping rags, are charged to the department concerned wherever possible or to General Factory Expense.

### 5. Other Controllable Items

71 Spoiled Work

72 Unemployment Insurance

73 Unclassified

Spoiled work in every case is chargeable either to a productive or pre-requisite production department and is apportioned accordingly. This information is obtained from a weekly summary of spoiled work by departments.

Unemployment Insurance is apportioned according to the number of workmen in each department and the insurance classifications. This pertains only to the employer's portion of the tax.

Unclassified items are included in the controllable section as they are in most cases applicable to some particular department.

The weekly apportionment of these expenses would establish greater control but at the present time it is not felt by the management that the return would be in proportion to the time and expense involved.

### Predetermined Expenses

81 Depreciation

82 Insurance

## COST AND MANAGEMENT

### 83 Taxes

### 84 Workmen's Compensation Board Insurance

All of the above accounts are supported by appropriate schedules. In the case of depreciation a schedule is maintained showing a list of the equipment concerned, its location in each department, the original cost, the replacement cost, the scrap value when fully depreciated, depreciated value to date, and the monthly depreciation rate. A schedule is also maintained of the value of the building, depreciated monthly and charged to Building Expense (Account 91).

A similar schedule is used for Insurance premiums. This is necessary as separate policies are carried on the building and on the machinery and equipment therein.

Land taxes are distributed on the basis of floor space occupied and business taxes on the approximate dollar volume of production for each of the productive departments for the previous year. These expenses are also accounted for on appropriate schedules.

Workmen's Compensation Insurance is distributed monthly according to the number of regular hourly rate employees in each department.

### Unapportioned Expenses

#### 91 Building Expense

#### 92 Tool, Die and Jig Expense

#### 93 Pattern Expense

#### 94 Drafting and Designing Expense

#### 95 Welding and Maintenance Expense

#### 96 Shipping and Receiving Department Expense

#### 97 Warehouse and Tool Crib Expense

#### 98 Cost Accounting and Timekeeping Expense

#### 99 General Factory Expense

Building expense is apportioned in accordance with the area in square feet of the space occupied by each department. You will notice that this expense is apportioned not only to the productive departments but also to the various pre-requisite production departments to be included in their total apportioned expenses.

Tool, die and jig labour and materials and other apportionable expenses not already charged to a productive department, for example, tools manufactured for the tool crib, are accumulated and included in General Factory Expense for later apportionment.

This same procedure holds true for the balance of the unapportioned expenses accounts with the exception of General Factory Expense. In fact, these accounts are only included in the sub-account classification for apportionment purposes and are cleared every month.

When all unapportioned expenses have been accumulated in the General Factory Expense account they are distributed on the basis of pay roll hours obtained from the departmentalized pay roll. The pay roll hours of each department are divided by the total pay roll hours in all departments, to obtain the percentages used for apportionments. These percentages are applied to General Factory Expense to apportion it to the various productive departments. The total apportioned expenses are now posted from the apportionment sheet to corresponding departmental burden accounts.

## COST ACCOUNTING IN A SMALL FACTORY

### Departmental Burden Accounts

- 101 Small Parts Department
- 102 Machine Shop
- 103 Foundry Department
- 104 Finishing Department
- 105 Final Assembly and Machine Construction Dept.

There are five departmental burden accounts, one for each corresponding productive department work in progress account. In operation, these burden accounts function as clearing accounts to clear the unapportioned expenses accumulated in the various sub-accounts into the departmental work in progress accounts.

In order to distribute this accumulated burden daily, instead of having to wait until the individual production order is completed, a predetermined hourly rate of burden application is used. This predetermined rate is based on normal production conditions and the average amount of burden applied per productive hour in each department for the previous month. This rate is subject to adjustment from month to month as production increases or decreases.

In addition to the regular "time in and time out" clock cards, each employee is furnished with a time sheet every day. On this sheet he records his activities for the day by hours and minutes spent on particular production orders. This time sheet also shows the employee's name, the department he works in, and his particular job or the operation which he performs.

The following day these time sheets are collected and checked against the in and out cards. They are then extended to show not only the cost of direct labour chargeable to one of the departments, but also to show the burden applied as calculated by multiplying the number of productive hours by the predetermined hourly burden rate. Where the workman has worked on more than one production order a separate calculation is made for each order involved.

These time sheets are then posted to the cost sheet for the production orders involved and also to a daily proof report, showing in summary the employees' wages—for pay-roll purposes, and the amount of applied burden to be credited to the appropriate departmental burden account. This amount is also debited to the corresponding work in progress account. This proof report is closed off weekly and payment made to the employees in cash. Entries are then made to the various departmental burden and work in progress accounts.

### Work in Progress Accounts

There are also five work in progress accounts listed in the same order as the departmental burden accounts in the 200 series. However, each work in progress account is divided into three sub-accounts:

- 01 Direct Labour
- 02 Direct Material
- 03 Applied Burden

As previously outlined all direct labour is posted to the departmental work in progress account from the daily proof report.

## COST AND MANAGEMENT

Direct materials are summarized weekly by departments from the stores requisitions and posted to the appropriate work in progress accounts. This procedure was also discussed in the outline of the stores inventory group.

Applied burden is posted from the daily proof report and a statement of burden over-applied or under-applied in relation to actual cost is included in the monthly report, Exhibit A, furnished each department foreman.

Each work in progress account acts as a control account over a subsidiary ledger of individual cost sheets, Exhibit B. These cost sheets show a description of the part or assembly, the quantity ordered, the quantity produced to date, the order number and date, the department or departments involved, the material used, the labour expended, and the burden applied. On the reverse side a daily labour distribution is maintained on which to enter the time sheets pertaining to the order. Each cost sheet is left open until the cost department is notified that the order is completed at which time it is removed from the current binder and filed for future reference.

### SHOP PROCEDURE

In order to show where the figures posted to the work in progress accounts and the various cost sheets originate, an outline of the shop procedure is presented herewith, by departments.

#### **Small Parts Department**

This department is operated on a continuous production basis. The factory manager, who also does the planning, issues an order sufficiently large to keep the department busy for several weeks. The production order is prepared in three copies. The first copy goes to the stores department as their authorization to supply the material required or purchase it if necessary. The second copy is retained by the factory manager for tracing purposes and the third copy is passed to the cost accountant who sets up a corresponding cost sheet for the part or assembly to be manufactured. This cost sheet is cross referred to the production order for identification purposes and the order is then passed to the foreman of the small parts department.

Each employee's time sheet is identified with the cost sheet and production order number as are all material requisitions. Space is provided on the reverse side of the production order for material requisitioned and returned and partial or complete deliveries of the finished part or assembly. Scrap reports may also be entered on the reverse side of the production order and are recapitulated weekly for entry to the Spoiled Work Account. (Account No. 71.)

When parts or assemblies are completed they are listed on a finished parts voucher, Exhibit C, prepared in three copies. Two copies, the original and duplicate, are taken to the cost accountant, who prices them from the cost sheet and retains the duplicate copy. The triplicate copy is forwarded to the factory manager for notation on his copy of the production order. The original copy is then taken to the stock department with the finished parts or assemblies. A notation is made



# COST ACCOUNTING IN A SMALL FACTORY

| MONTHLY REPORT TO DEPARTMENT FOREMAN     |                     |                     |
|--|---------------------|---------------------|
| .....DEPARTMENT                          |                     |                     |
| Month of .....19.....                    |                     |                     |
|  | Total<br>This Month | Total<br>Last Month |
| Productive Hours .....                   |                     |                     |
| Productive Labour .....                  |                     |                     |
| Unapportioned Expenses .....             |                     |                     |
| Superintendence .....                    |                     |                     |
| Receiving and Shipping .....             |                     |                     |
| Sundry Non-Productive Labour .....       |                     |                     |
| Drafting and Designing Labour .....      |                     |                     |
| Pattern Labour .....                     |                     |                     |
| Tool, Die and Jig Labour .....           |                     |                     |
| Welding and Maintenance Labour .....     |                     |                     |
| Drafting and Designing Material .....    |                     |                     |
| Pattern Material .....                   |                     |                     |
| Tool, Die and Jig Material .....         |                     |                     |
| Welding and Maintenance Material .....   |                     |                     |
| Purchased Water .....                    |                     |                     |
| Purchased Gas .....                      |                     |                     |
| Purchased Electricity .....              |                     |                     |
| Supplies .....                           |                     |                     |
| Spoiled Work .....                       |                     |                     |
| Unemployment Insurance .....             |                     |                     |
| Unclassified .....                       |                     |                     |
| Depreciation .....                       |                     |                     |
| Insurance .....                          |                     |                     |
| Taxes .....                              |                     |                     |
| Workmen's Compensation Board Ins..       |                     |                     |
| Building Expense .....                   |                     |                     |
| Tool, Die and Jig Expense .....          |                     |                     |
| Pattern Expense .....                    |                     |                     |
| Drafting and Designing .....             |                     |                     |
| Welding and Maintenance .....            |                     |                     |
| Shipping and Receiving .....             |                     |                     |
| Warehouse and Tool Crib .....            |                     |                     |
| Cost Accounting and Timekeeping .....    |                     |                     |
| General Factory Expense .....            |                     |                     |
| Total Apportioned Expense .....          |                     |                     |
| Rate per productive hour .....           |                     |                     |
| Balance forward Previous Month .....     |                     |                     |
| Total .....                              |                     |                     |
| Current rate used during month .....     |                     |                     |
| Burden Applied at above rate .....       |                     |                     |
| Balance forward next month .....         |                     |                     |
| Burden Over-Applied .....                |                     |                     |
| Burden Under-Applied .....               |                     |                     |
| New Current Rate to be established ..... |                     |                     |

EXHIBIT A

## COST AND MANAGEMENT

[illegible]

## COST ACCOUNTING IN A SMALL FACTORY

on the reverse side of the departmental copy of the production order as to the quantity delivered.

In the stock department an entry is made in the Component Parts Stock Account, or Product Stock Account as the case might be, in the same manner as an entry made when raw materials are received in the stores department. A similar ledger page is used and a separate account is maintained for each component part or assembly.

The copies of the delivery vouchers retained in the cost department are capitulated weekly and form the basis of the entry relieving the work in progress account and charging the completed parts or assemblies to the stock accounts.

As already mentioned, scrap is summarized weekly and is transferred back into raw materials to be used again. The work in progress account is credited with the full value of the scrapped part or assembly and the stores department charged with the scrap value as a purchase of raw material. The difference is charged to Spoiled Work (Account No. 71).

When an order is completed the final finished parts voucher is endorsed "Order Completed". This authorizes the cost department to close their cost sheet for that particular production order and also notifies the factory manager that a new production order is required.

### Machine Shop

When the machine shop is occupied in normal production work, a similar procedure to that outlined for the small parts department is used. However, when special machine shop orders for gears are received the production order is made out in as many copies as the number of departments involved plus one for the factory manager. The copies of the production order are passed to the cost accountant in the usual way, and after setting up the necessary cost sheet and cross referring it to the production order, the copies of the order are distributed

| ROBINSON MACHINE AND SUPPLY COMPANY LIMITED          |      |                    |        |                 |
|--|------|--------------------|--------|-----------------|
| FINISHED PARTS VOUCHER                               |      |                    |        |                 |
| Date.....  |      |                    |        | 19.....         |
| To Storekeeper:                                      |      |                    |        |                 |
| Herewith delivered the following finished parts from |      |                    |        |                 |
| Department.....                                      |      |                    |        |                 |
| Production Order No.....                             |      | Cost Sheet No..... |        |                 |
| Description  | Unit | Unit Cost          | Amount |                 |
|  |      |                    |        |                 |
| Delivered by .....                                   |      |                    |        |                 |
| Received by .....                                    |      |                    |        | Serial No. 9999 |

### EXHIBIT C

## COST AND MANAGEMENT

to the various departments. Each department then completes its portion of the job and passes time sheets and material requisitions to the cost accountant for entry on the cost sheet. As the job progresses from one department to another their completed copy of the production order is returned to the Factory Manager so that he always knows exactly where an order is in the factory. When the job is completed the regular finished parts voucher is prepared, priced by the cost department, and passed with the gear into the stock department to be held awaiting shipping instructions. Copies of these delivery vouchers are recapitulated in the cost department weekly to provide a basis for relieving the work in progress account.

Scrapped parts are dealt with in the same manner as in the small parts department.

### **Foundry Department**

In many cases it would not be economical for the foundry to pour only the number of castings required for a particular production order. Therefore, in order to avoid unnecessary waste the foundry operates on a casting schedule prepared by the factory manager and reports each day, the number of castings poured.

A daily casting summary, Exhibit D, is prepared in four copies. It shows the amount of raw material and coke used, the description of the casting poured and the number and weight of the rejected castings. The original copy of the casting report is forwarded to the factory manager. The duplicate accompanies the good castings to the finishing department. The triplicate is passed to the cost accountant who extends the labour charges, the amount of applied burden, and posts the reports to the appropriate cost sheet. The fourth copy is passed to the stores ledger keeper in order that he may adjust his raw material and coke records. The weight of rejected casting is deducted from the amount of raw materials used and these castings are subsequently used as scrap iron in later charges.

### **Finishing Department**

This department is principally a process department where the castings are heat treated, cleaned, planed, painted, etc. On the copy of the casting report received from the foundry, space is provided for the addition of materials and labour used in finishing the castings. When the castings listed on a casting report have all been completed, this copy of the report is taken to the cost department for entry to the cost sheets. The usual finished parts voucher is prepared showing separately the cost of castings and the cost of finishing. These delivery reports are summarized weekly to form the basis for an entry crediting both Foundry and Finishing Department work in progress accounts and charging the completed castings to the stock accounts.

### **Final Assembly and Machine Construction Department**

When an order is received by the sales department for a piece of machinery, an extra copy is passed to the factory manager. He then prepares a production order in three copies, retaining one, and passing one to the stores department, together with a bill of material required to complete the order. The third copy is passed to the cost accountant

# COST ACCOUNTING IN A SMALL FACTORY

| DAILY CASTING REPORT                      |                      |                                 |   |
|---|----------------------|---------------------------------|---|
| Schedule No. ....                         |                      | Date ..... 19.....              |   |
|   |                      | Cost Sheet No. ....             |   |
| Description of Article Cast               | No. of Good Castings | No. of Rejected Castings        | Weight                                      |
|   |                      |                                 | Charge .....<br>Returns .....<br>Coke ..... |
| FINISHING DEPARTMENT                      |                      |                                 |   |
| No. of castings delivered to stores ..... |                      | Finished parts Voucher No. .... |   |
| Productive Labour ..... hours .....       |                      | min. ....                       |   |
| Materials .....                           |                      |                                 |   |
| Applied Burden .....                      |                      | Cost per casting .....          |   |
| Total Cost .....                          |                      |                                 |   |

EXHIBIT D

## COST AND MANAGEMENT

in the usual way, and after setting up his cost sheet, the cost accountant forwards the order to the foreman of the final assembly and machine construction department. The foreman of the department then prepares requisitions for raw materials from the stores department or parts from the component stock department as the case might be. As more than one order is under assembly at one time, the daily time sheet for every man is used in this department also. These are passed daily with copies of requisitions to the cost accountant for entry on the cost sheets.

In addition to the weekly summary of material requisitions it is necessary to prepare a weekly summary of component parts withdrawn for assembly into finished products. This summary actually is only a transfer of the finished parts from Component Parts Stock (Account 301) to Product Stock (Account 305) although the value of such parts is included in the cost of the finished machine.

When the order is completed the regular finished parts voucher is prepared, priced by the cost department and passed to the stock department for entry in the Product Stock Account until shipping instructions are received from the factory manager.

### STOCK INVENTORIES

301 Component Stock Account

305 Product Stock Account

As already pointed out, two separate stock ledgers are maintained, one for component stock and one for product stock. When the factory manager has been notified of the completion of an order, he prepares a shipping notice in four copies. He retains one copy as a tracer and passes the duplicate to the shipping department to authorize shipment. The triplicate is passed to the stock department and is used to support the issue of the finished product to the shipping department. The fourth copy is passed to the cost accountant who holds it pending receipt of the consignee's copy of the bill of lading and a copy of the packing note, together with the shipping department's copy of the shipping notice. The two copies of the shipping notice are then priced from the cost sheet, notation made on the cost sheet of the date of shipment, and one copy of the shipping notice together with the bill of lading and the packing note are passed to the general office for invoicing.

The copies of the shipping notices retained in the cost department are recapitulated weekly to form the basis of an entry crediting the Product Stock Account and debiting the General Ledger Balancing Account (Account No. 400) for ultimate transmission to the cost of goods sold account in the general ledger.

400 General Ledger Balancing Account

This account and its twin account, Factory Ledger Balancing Account in the general ledger are only included in the account classification as a convenience. It enables the general office to take off a trial balance at any time without making it necessary for the cost accountant to foot and balance all factory ledger accounts.

# COST ACCOUNTING IN A SMALL FACTORY

## ROBINSON MACHINE AND SUPPLY COMPANY LIMITED MANUFACTURING STATEMENT

|   | For Month of..... | \$ 000.00 |
|---|-------------------|-----------|
| Assembly Work in Progress, beginning of month .....         |                   | \$ 000.00 |
| Component Stock Inventory, beginning of month .....         |                   | \$ 000.00 |
| Component Work in Progress .....                            | \$ 000.00         |           |
| Material Used .....   | 000.00            |           |
| Productive Labour .....                                     | 000.00            |           |
| Applied Burden .....  | 000.00            |           |
|   | \$ 000.00         |           |
| <b>Less:</b> Component Work in Progress, end of month ..... | \$ 000.00         |           |
| Cost of Component Parts Manufactured .....                  | 000.00            |           |
|   | \$ 000.00         |           |
| Component Parts Inventory end of month .....                | 000.00            |           |
| Component Parts Requisitioned for Assembly .....            |                   | 000.00    |
| Productive Labour, Assembly Department .....                |                   | 000.00    |
| Applied Burden, Assembly Department .....                   |                   | 000.00    |
|   |                   | \$ 000.00 |
| <b>Less:</b> Assembly Work in Progress, end of month .....  |                   | \$ 000.00 |
| Cost of Finished Products Manufactured .....                |                   | \$ 000.00 |

### EXHIBIT E

## STATEMENT OF WORK IN PROGRESS DEPARTMENT

|   | For Month of..... | \$ 000.00 |
|---|-------------------|-----------|
| Work in Progress, beginning of month .....                |                   | \$ 000.00 |
| Material Requisitioned .....                              | \$ 000.00         |           |
| Productive Labour .....                                   | 000.00            |           |
| Applied Burden .....                                      | 000.00            |           |
|   |                   | 000.00    |
| <b>Less:</b> Products delivered to Stock Department ..... |                   | \$ 000.00 |
| Work in Progress, end of month .....                      |                   | \$ 000.00 |

### EXHIBIT F

## COST AND MANAGEMENT

### STATEMENTS AND REPORTS

At the end of each month a Cost of Manufacturing statement is prepared, Exhibit E, showing the manufactured cost of component stock and product stock completed during the month.

In addition to this, a monthly Statement of Work in Progress, Exhibit F, is prepared for each department showing work in progress at the beginning of the month, work placed in progress, and work in progress at the end of the month.

As already outlined, a statement of over-applied and under-burden, Exhibit A, is furnished each department foreman at the end of the month.

Weekly summaries and statements used in the actual operation of the cost system are not included as they have already been explained.

### THE GENERAL OFFICE

As we are principally interested in the composition and operation of the cost accounting system it is not felt that a detailed explanation of the operation of the general office and the general ledger is necessary.

#### Factory Cost of Sales

When an entry is made crediting the stock accounts in the factory ledger, the copy of the shipping notice is forwarded to the General Office. These shipping notices are recapitulated weekly in the general office to supply the cost of sales for each sub-account in the cost of sales classification. This summary is balanced against the total entries for the week to the Factory Ledger Balancing Account dealing with sales.

A monthly statement of Cost of Goods Sold and Profit and Loss is prepared, and a copy passed to the factory manager for reference purposes.

#### Balance Sheet

A semi-annual and annual balance sheet is prepared and condensed copies passed to all employees for information purposes.

#### Conclusion

While it is realized that the system outlined is neither adequate nor flexible enough for a large factory, it is felt by the management of this factory that it is sufficient to meet their present requirements.

Standard costs are used in the statistical sense in the preparation of reports and statements. However, these costs are being accumulated with the intention of embodying them in the double entry accounting system at some future time. A careful record is maintained of unit costs of every article manufactured and these costs are constantly being compared with standards already established or in the process of establishment.

In conclusion, may we state that the existing accounting system might well be used as an example for other small manufacturing concerns who are planning with an eye for future development. If as much care is taken in any future innovations as has been taken in planning the system now in use, we feel that, from an accounting standpoint, the success of the enterprise is assured.



## « STUDENT SECTION »

Comments by A. V. HARRIS, C.A.

### ADVANCED COST ACCOUNTING

#### Problem 2

Grade Processors Limited manufactures a series of six different products. The cost accounting system of the Company is controlled through job costing. It appears to be relatively simple to obtain actual material and labour costs of each product, but some difficulty has been encountered in applying overheads. The present procedure calls for distribution of actual overhead expenses at the end of each month by means of a distribution sheet. The actual expenses tend to be much less in the early accounting periods of the fiscal year and much greater in the later periods due chiefly to the delays in passing the accounts chargeable to overheads. This condition results in considerable variation in the amounts to be applied over the respective months' production.

The directors have called for a report on the possibility of replacing the present cost system with a standard cost system. It has been ascertained that the manufacturing processes are simple and the production orders for each product show little variation in unit costs of producing the various batches. Further, the industry generally with which Grade Processors Limited is affiliated through Trade Associations use Standard Cost systems effectively.

Write the required report to the Directors, discussing the advantages and disadvantages of the proposed change to a standard cost system.

#### Solution to Problem 2

This question was obviously intended to test the candidate in his ability to set down a convincing argument in good form on a subject in cost accounting. In other words, the examiner was interested in finding out if the student was at the stage where he should advance to prepare his thesis.

The report was expected to show that the student had paid some attention to —

- (1) Judicious use of headings
- (2) Division of subject matter into paragraphs
- (3) Correct use of English (or French), proper sentence structure, correct grammar.
- (4) Address the report to the Directors
- (5) A preliminary brief introduction of the requirements of the **problem** so that the reader could understand the points to be decided without other reference.
- (6) Sign and date the report.
- (7) Orderly presentation of material.

## COST AND MANAGEMENT

In connection with presenting material, it would be useful in this instance to comment on the present system of costing, pointing out the difficulty of distributing actual overhead. The report might suggest the use of an arbitrary overhead rate, to be fixed for the periods and adjusted when necessary.

The problem was so worded that the student was expected to deduce that he should discuss the advantages and disadvantages of a standard cost system. The chief disadvantage would be, the difficulty of introducing a new system, thus disorganizing the present staff routing. The advantages, according to the Cost Accounting text books:—

(a) costs would be predetermined before production takes place, rather than after production had been completed. The historical aspect of costs become less important.

(b) The comparison of actual with standard costs and the analysis of variances is of great assistance in disclosing efficient or non-efficient operations. Attention is focussed on the variance.

(c) Price and production policies may be formulated in advance.

(d) Standards can be used to provide incentive to workmen and supervisors.

(e) Standards reduce details which are necessary in calculating actual costs and usually result in a saving in accounting labour costs.

As the company is a member of an association which uses a standard cost system the advantages of uniform cost systems apply —, which are, briefly:—

(1) The best method of costing is known for the industry after extensive study by the industry.

(2) There will be uniformity of selling prices based on similarly calculated costs.

The report may deal with the setting up of standards although the question does not specifically call for this. The question does describe a situation which lends itself to the use of standard cost system.

As approximately one hour's work was expected in answer to the question, the report should **not** consist of two or three paragraphs. It should be clear, concise, because there is a good deal of material to cover, and as convincing as possible.

### Comments

The writer of this section noted with interest an article in "Cost and Management" on the subject of report writing, which appeared about the time these papers were being marked. It is strongly recommended that candidates read this article. The above question was poorly answered by the English speaking candidates. The average mark obtained by candidates in the Province of Quebec was  $5\frac{1}{2}$  out of 15, and for other provinces  $7\frac{1}{2}$  out of 15. The examiner felt that the problem was worth more than the 15 marks assigned, but was aware that candidates have not yet realized the importance of this subject, and therefore would do poorly in the problem. (Future candidates in Advanced Cost examinations, take note).

The tendency of the student was to scribble down a few points 1-2-3, etc., and stop, as if they wished to say more — but did not have the time or ability to do so. The informality and lack of style was dis-

## STUDENTS' SECTION

trekking, and it is doubtful if the directors when they read the efforts would be too happy about the calibre of their staff. It is agreed that proficient accountants are not generally good authors, but at least they should be able to present something which did not have the appearance of an effort by a fifth grade school boy. Candidates are reminded that the ability to produce a good cost report is the result of plenty of practice and study.

As an example of what not to do — there is reproduced below one of the poorer efforts. This student plunged into the detail in such a way that he did not manage to set forth any of the more convincing points.

### II — Grade Processors Limited

To the Directors:

Report on the installation of a Standard Cost System.

In connection with the installation of a standard cost system, the following considerations are submitted for your information.

The standard costs to be used in your plant would be based on specifications submitted by your engineering department, on time study, and for overhead expenses, on past experience. It stands to reason that, unless there are changes in specifications, or in prices, the costs used will be very near the actual ones and will enable you to value your production and various inventories at a value that will be more in line with existing conditions.

These standard costs would certainly remedy the situation, whereby your actual expenses are much less in the early accounting periods of the fiscal year than they are in the later periods. As you are aware of this situation is due to the delays in passing the accounts chargeable to overheads. Comparison between standard figures and actual ones would reveal a variance, that would have to be commented upon, and necessary action would certainly be taken by your accounting staff to have all accounts charged to the period they are applicable to.

As for materials, the standard cost system would certainly enable you to keep a close check on the materials used. The standard costs call for a certain quantity of material, which includes an allowance for wastage and shrinkage. Unless the specifications are changed, the actual quantity of materials used should be pretty well in line with the standard allowance. If not the case would be investigated and the responsibility placed upon the right party. If any difference "....."

On the other hand one of the better reports (which was still none too good) is the following: A check of the items outlined at the beginning of the solution will readily indicate wherein this report is deficient.

The Directors, Grade Processors Limited,  
1220 Sun Life Building, Montreal.

### Subject — Standard Cost System

Dear Sirs,

As requested by you I am submitting herewith my report outlining the advantages and disadvantages of the proposed change of your Company's accounting system to a Standard Cost System.

Yours very truly,  
Cost Accounting Consultant.

## **COST AND MANAGEMENT**

### **REPORT OUTLINING ADVANTAGES AND DISADVANTAGES OF A STANDARD COST SYSTEM FOR THE GRADE PROCESSORS LIMITED**

#### **Advantages of a Standard Cost System for this Company**

- (1) Adoption of Standard costs will correct the trouble you are having in charging overhead to production. Costs are predetermined and can be charged to each job as it is completed and to the Work in Process Accounts immediately at the end of each month. The overhead charged will not vary with seasonal variations or volume of business and hence cost comparisons will be more helpful to Management in its various functions.
- (2) Standard costs are a useful tool to Management for controlling costs. Comparison of actual with standard costs is made each month and reported to Management in a Monthly Statement of Variances from Standard Costs. Reasons for the variances are given and also who is responsible for them, so Management knows where it is making or losing money.
- (3) The above report acts as an incentive to department supervisors and others as they know they are judged by Management by their performance as compared to the standard.
- (4) Standard Costs are a great aid to Management in deciding upon prices for materials and production policies, as the costs are known in advance of production.
- (5) The standards aid the Purchasing Department as it knows how much Material is required for the various products and departments and the price limit to be paid for the Material.
- (6) Standards are an aid to the Personnel Department and Production Departments in hiring men and planning for manpower requirements.
- (7) Standard costs speed up preparation of inventory calculations at the end of the period as the costs of the Material are known in advance.
- (8) Inventories are not affected by rates of operation and seasonal fluctuations.
- (9) The use of standard costs would facilitate comparison of our operations with other companies in the industry most of whom use this system, further, it will be possible to check the accuracy of the standards we set up by comparing them with their standards.
- (10) Profit and Loss Statements and other operating statements will reflect the efficiency of the operations as variances from standard costs will appear on them.

#### **Disadvantages of a system of Standard Costs for this Company**

- (1) The main disadvantage is the fact that the standards set are naturally a matter of opinion. A great deal of study must be given this aspect of the system as otherwise the variances reported may be open to question and the accuracy of all the data doubted.
- (2) It is important that valuation of inventories should not vary too much from the actual costs and if they do it may be necessary to adjust them accordingly.





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Chairman: G. H. Elliott, R.I.A. Commonwealth Construction Co. Ltd.  
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